Read Me
VAR's Estimation

Description of M-files

The environment is that of a 4-variables VAR(4) given by:

$$\mathbf{y_t} = \Phi_c + \Phi(L)\mathbf{y_t} + \mathbf{u_t} \quad \mathbf{u_t} \sim N(0, \mathbf{\Sigma})$$

The VAR contains, respectively, the log of de-trended real GDP per capita, the inflation rate (GDP deflator), a measure of nominal interest rate and real money balances. Data are quarterly and refer to the US economy for the period 1959(1):2006(4). The model is estimated using Bayesian methods. In particular, given a prior $p(\Phi, \Sigma)$ and the likelihood function $L(\mathbf{Y_{1,T}}|\mathbf{Y_{-p+1,0}}, \Phi, \Sigma)$, we get a posterior density through Bayes rule:

$$p(\Phi, \Sigma|\mathbf{Y}) \propto L(\mathbf{Y_{1,T}}|\mathbf{Y_{-p+1,0}}, \Phi, \Sigma)p(\Phi, \Sigma)$$

We specify that $p(\Phi, \Sigma)$ follows the Inverted Wishart Multivariate Normal density, with moments derived using dummy observations from the Minnesota prior. This prior is conjugate for the likelihood function in this model.

The file `VAR.m` estimates the above model using the direct sampling algorithm described in Section 2 of **?**. The file returns a figure plotting the recursive averages and the posterior marginal density of the largest eigenvalues of the companion form matrix. The file also returns the marginal data density in the scalar `mdd`.

`VAR.m` uses a number of subroutines in the folders `Minnesota Prior` and `Data` to perform this task. In particular:

- `vm-loaddata.m` ⇒ Loads the data used in the estimation;
- `vm-spec.m` ⇒ It is a file that controls the hyper-parameters of the Minnesota prior;
- `vm-dummy.m` ⇒ Generates dummy observations using the Minnesota prior;
- `vm-mdd.m` ⇒ Computes the marginal data density.